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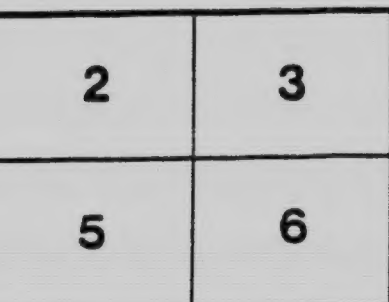
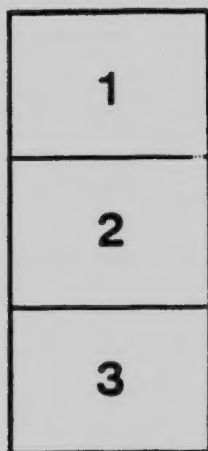
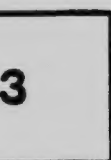
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**AWAKENING RECOGNITION**  
OF THE  
**ENGINEER**

BY FRASER S. KEITH

Compliments of  
Ottawa Branch, Canadian Society of Civil Engineers.

# AWAKENING RECOGNITION OF THE ENGINEER

By FRASER S. KEITH

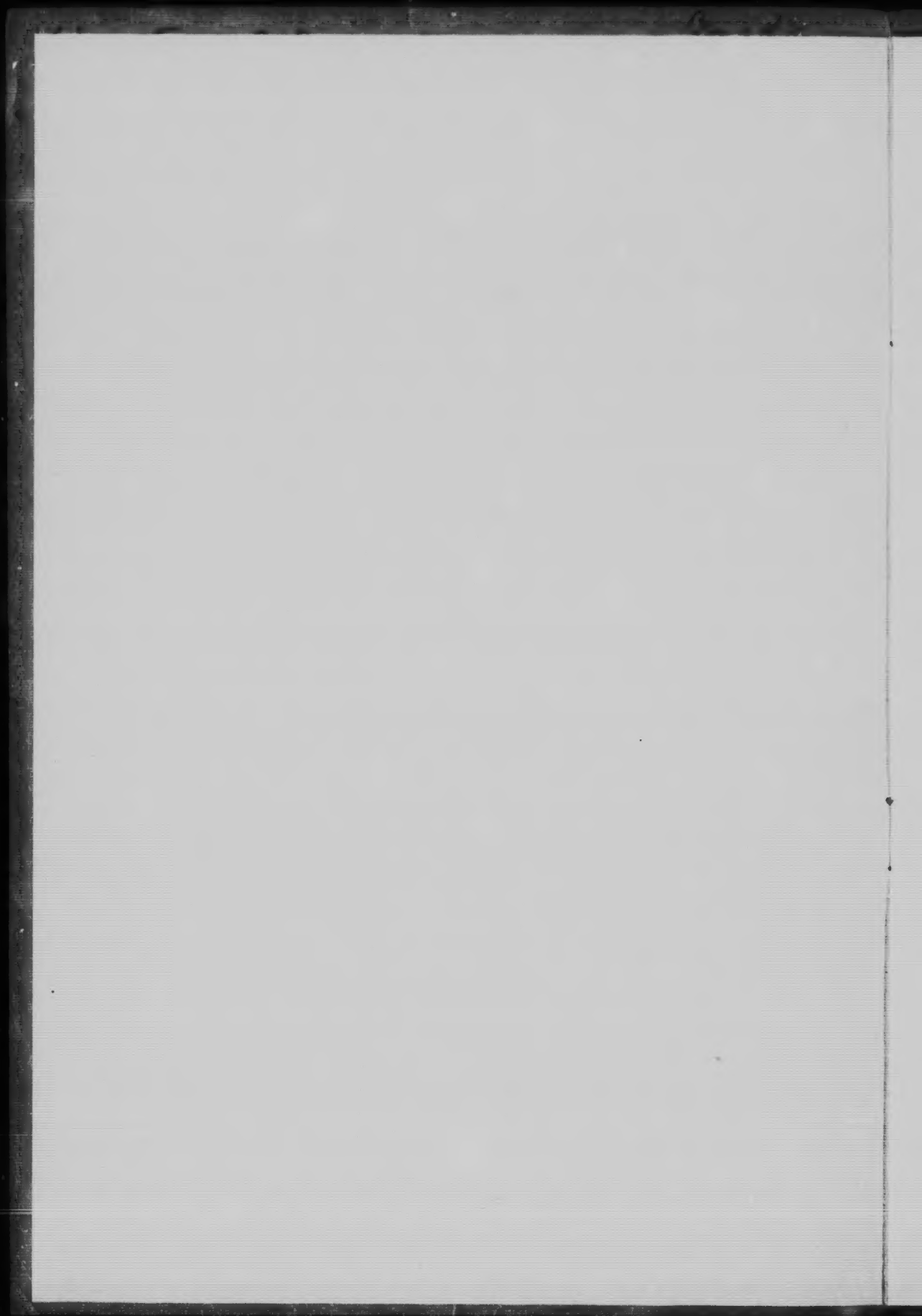
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## AWAKENING RECOGNITION OF THE ENGINEER

### *The Awakening*

Any discussion regarding the awakening recognition of the engineering profession must consider to what extent the awakening has occurred and what must be done to make the recognition complete.

The awakening has already taken place in the profession itself, and the extent to which recognition may grow on the part of those outside the profession depends entirely on how far that awakening has occurred within ourselves, and to what extent we are prepared to arouse those outside to a similar sense of awakening.

The recognition from within is a forerunner of the recognition from without, and must be by it inspired.

Let us glory in the fact that we have become alive to a sense of our position and our possibilities, but let us not deceive ourselves as to the headway that has been made. We have awakened, it is true, but are very much in the position of one aroused from a long sleep. We are yet blinking and rubbing our eyes and wondering just what we should do, because the full light of what might be and what should be has come to us, and finds us lacking somewhat in initiative. During the past decades the engineering profession has been the fountain source of material advancement and has been a mighty modernizing and civilizing force down to the present minute, yet as far as real recognition of the achievements of the profession and its elevation to its real status in society is concerned, we have advanced little beyond the glacial age of tradition; so that fierce fires of enthusiasm will be needed to melt the ice-bound barriers of precedent with which we have to contend.

You all know that for some years past there has been a general feeling of unrest on the part of engineers in Canada, the United States and Great Britain. This has given rise to a general searching and questioning as to why the engineer is not occupying the position to which his ability, education and accomplishments justly entitle him.

### *Unrest in Society.*

In our own Society this unrest, which has been, in truth, a feeling of dissatisfaction based on a certain anxiety towards improved conditions has resulted in the appointment of a Committee on Society Affairs. But, after all, is not this the result of professional consciousness which has arisen and demands expression in activity?

At the last meeting of Council held on October 30th, the report of the Committee on Society Affairs was accepted and approved. The report as approved by the Council is now in the hands of the printers and will be issued to our corporate members of the Society within the next few weeks. A vote is to be taken, returnable in time for the



annual meeting to determine if these recommendations meet with the full approval of the membership at large. Not even the members of the Committee believe that the proposed by-laws are at present perfect, but if adopted, will mean a long step in advance, and will pave the way for any further improvements that may be proposed.

The extent to which the individual member realizes the suggested changes, and personally sets about to carry into effect the program as contained in the report of this Committee, will determine how much the Society and the profession have awakened to a realization of a proper perspective of what is required by the profession in its relations with the outside world.

### *What the Awakening Means.*

The distinctive feature of this report is the increased sense of responsibility of our Society, which means the profession, in its relation to the individual member, and of greater importance still, in its relation to its service to the public at large. We have, therefore, apparently reached a point where we know that our former objects were limited and our activities circumscribed, and it is now possible, with that knowledge, to go further, believing that the future of the profession lies largely in how far it is willing to assist the individual member and to what extent he may co-operate with the profession in dealing with all public matters, whereby our interests are affected, using this newly awakened sense in making our combined influence felt outside of the Society. It would then appear that (and let me emphasize) **the awakening of the engineering profession involves, in the first instance the increased recognition of the profession's responsibility to the individual, and the individual's responsibility to the profession, and in the second place their collective responsibility to the public, and in turn an acknowledgement from the public of the engineer's real place in national affairs, which includes status, remuneration and opportunity of service.**

### *Recognition from Without.*

You will find, generally speaking, that the recognition engineers have received has been as individuals rather than as a profession. Fifty years ago the engineer was a skilled laborer, and his status was such. During that time he has become a man, highly educated, highly trained, and so successful in his application of knowledge to material things, that his work has wrought untold benefit to humanity. The great achievement of the engineer in revolutionizing the material welfare of mankind has fitted him to shoulder greater burdens and responsibilities.

The gradual evolution of the status of the engineer has forced him to take account of other laws and forces than those of mathematics and science, so that to-day he is compelled (almost without realizing it) to consider economic and social problems, and particularly those arising out of a proper appraisal of equity between man and man. The latter includes a study of the complex problems of tax valuations as between individuals and corporations, advice as to financing of public works, and advice in arriving at just and equitable rates for service rendered by public utilities. The engineer is thus becoming not only one who

directs the great sources of power in nature for the use and convenience of man in the most economical manner possible, but he is fast becoming an economist and an arbiter in industrial problems.

When a Committee was appointed in 1915 by the President of the United States from the National Engineering Societies to constitute a Naval Consulting Board and Committee of Industrial Preparedness, the profession received its highest recognition. This, in fact, is an epoch in the relation of engineers to national affairs. Of this action on the part of the President, Thos. A. Edison said, "This marks almost dramatically the entrance of the trained non-partisan, doing his work on the sole basis of efficiency and integrity, into the affairs of the Government." The men who are thus chosen have an opportunity of not only making a name for themselves, but of adding much to the prestige of the profession, and there is no doubt whatever that they will do so.

### *Why Engineers Should Have Recognition.*

It cannot be said, however, we have made any considerable headway towards being recognized in Canada. In his message to the people of Canada, on the 50th Anniversary of Confederation, Sir Robert Borden reviewed the development of production, commerce and wealth; the immense increase in transportation facilities; the conspicuous rise in the standards of living, and the great improvement in the general conditions of life throughout the Dominion. He pointed with pride to all this, yet he failed to remark that each and every one of these indications of advancement owes its present state directly to engineering skill, and to engineering progress. In the past, we have not, as a Society, recognized, and consequently are not in a position to enthuse others with the fact, that all material advancement in the history of the world's existence has had its foundation on engineering in some one or other of its branches. It is therefore not to be wondered at that members of governments, politicians and the man on the street are ignorant of this fact and fail to give credit where credit is due.

It is only recently that the government of this country has come to the point of recognizing, even in the most limited sense that the training of the engineer eminently fits him for any special position of executive responsibility. When the Premier appointed Mr. C. A. Magrath, M. Can. Soc. C. E., to the Chairmanship of the International Joint Commission he felt called upon to apologize for appointing an engineer, because it has been generally understood that positions of this kind were the special domain of the lawyer. As you know, Mr. Magrath since his appointment, has more than justified it in every sense of the term, and later, as Fuel Controller, has handled the fuel situation of Canada, although his problem was a most difficult one, in a manner that commands the admiration and respect of all.

The Government of the United States appointed as Food Controller Herbert Hoover, M. Am. Soc. C. E. Canada appointed a lawyer for this office. Note the difference. The engineer went about his work with the idea foremost in his mind of carrying out and securing the desired result for which a Food Controller was needed, namely, to conserve food resources, assure reasonable prices, eliminate profiteering and assist the Allies to secure supplies. The work of the engineer Food Controller in the United States has resulted in the prices of food products steadily decreasing, while in Canada during the same period, they have increased by leaps and bounds.

Here we have a practical, definite illustration of the difference of what is to be expected from the appointment of an engineer when something definite was to be done, in contrast to a lawyer. This is possibly the first time we have had an opportunity of comparing the methods of the two, and we owe it to ourselves to educate the public to this fundamental difference of attitude of mind and directness of purpose between the methods of the engineer and the politician. The significance of this example cannot be too strongly emphasized and cannot be too firmly impressed upon the minds of the citizens of this country.

Our own president, Col. John S. Dennis, was appointed by the British Government, some months ago to take charge of the British recruiting mission at Chicago, and the record he has established as recruiting officer stands without a parallel for achievement on this continent. During the time he has been actively engaged over twelve thousand volunteers have been recruited, more than were enlisted in the whole of Canada during that time. After one speech he made in Providence, R.I., 76 men applied for admission to the Canadian Army. Last month Col. Dennis, who is sixty years old, in the course of his work, travelled by rail nearly five thousand miles, marched three hundred miles on foot, visited thirty-two places and made sixty-seven speeches. This illustrates again the inbred sense of responsibility and joy in accomplishment, without practical thought of reward, that characterizes the engineer.

### *Part Played by the Engineers in the War.*

If the striking manner in which engineers carry out special work assigned to them is not sufficient to give the whole profession added prestige, then the part played by our gallant men in connection with the great war should surely have some effect. We have nearly thirty per cent. of our entire membership actively participating in the war. They have performed deeds of bravery and endurance that would put to shame the heroes of history or mythology. They have made it possible to conduct the great campaigns by providing transportation, water and sanitary facilities, while exposed, for the most part, to the fire of the enemy, and the war will be won largely by the superior engineering skill of the Allies in comparison with the Germans, whose whole history has been one of stolen ideas.

It would be well perhaps if we considered the engineering profession in the light of conquerors; the title Conquerors was given to a special publication of the Cleveland Engineering Society, which described notable engineering achievements. The more one dwells upon the thought the more fitting becomes the simile of applying the term conquerors to the profession, for the engineers have been conquerors in the highest and best and noblest sense of the word, as it is the engineer who has succeeded in overcoming the turbulence of nature, eliminating distance, conquering space, and making the earth, the sea, and the air subservient to the welfare of mankind.

### *Unity and Co-operation.*

To accomplish any near approach to our possibilities greater unity and co-operation will be necessary. These to some extent might become our watchwords.



Events in the world of engineering activities show clearly and unmistakably that a new era is dawning for the profession. The insularity of the engineer is slowly but surely giving way to a fraternity of spirit that has been almost entirely lacking in the past. The former idea of specializing in various groups has been transformed to a broader vision with a tendency towards union of all branches of the profession.

You have seen recently for the first time in the history of the profession a national engineering board appointed in the United States from the parent engineering societies, whose whole tendency seems to be towards closer union and greater co-operation. To some extent we are in a more advantageous position in Canada, as we have now made it possible to unite all the engineering professions in one great national body instead of starting a number of organizations as was done in the United States. It will mean that the members of our organizations will have to work as a unit and co-operate in the closest possible manner. The situation affords a great opportunity to the engineering profession, an opportunity in which every individual may take an active part, a chance to advance the interests of the profession in one great body of such strength of sufficiently high standard and at the same time broad enough to make it the goal of every man in this country who aims or claims to be a member of this high calling.

We have been criticized in the past, not only because we were accused of being narrow in our objects, but also it was stated we were collectively without a soul or heart. Be that as it may, if the heart of the profession were a composite heart of the individuals therein it would leave nothing to be desired, but we must admit there has been some coldness and to some extent indifference, and we should therefore to the greatest possible extent cultivate a fraternal spirit that will develop a heart in our organization, a pulsating, personal heart throbbing with human emotions, and cause that heart to beat warmly and sympathetically not only for our own members, but in our relations with the outside world.

It is in developing this spirit that the branches will play a great and ever increasing part. While we have a headquarters and a council to give general directions to affairs, the branches are the active energizing agents of the profession, and it is to them that we must look for the greatest personal activities. You know, gentlemen, of the opportunities that may arise whereby a branch may take an active part in local affairs for the benefit of the whole profession. We have an instance of this in the part played by the Calgary Branch, when they stood behind the City Engineer, who was being severely criticized in the building of the Centre Street Bridge, and were enabled to prove to the public that his critics were unjust. From this affair both the City Engineer and the Branch emerged with added respect and prestige.

### *Opportunities for Service.*

It is possible for a Branch to include in its discussions public matters of local interest, even where the Branch is not directly concerned. In fact, as a profession we will make greater strides if we give fuller discussion to public questions and less to technical subjects than we have in the past. The Branch should be more than a mere unit of the local members of the profession. It should be a fraternal organization meeting in a spirit of good-fellowship. It should encourage the younger

members in every way and give them an opportunity of learning public speaking, as well as absorbing the ideas of the older men in the profession. It should be ever and always on the lookout for opportunities for service. The Branch should be the technical centre in any community and could possibly take an active part in the technical education of the district or at least give advice thereon.

The big opportunity for service is coming in connection with the vocational training for returned soldiers, and in this the branches could play a leading part. No more worthy object can be thought of than this, and there is no other body of men similarly capable of giving assistance in this respect. In the United States the local engineering bodies study political questions to keep an active tab on the doings of local legislatures where the welfare of the profession is concerned; they act as Advisory Boards to Municipal Councils; they suggest legislation and in numerous other ways make their voices heard and influence felt. It is, therefore, to the branches that we must look for the full flower of development of the profession.

The proposed changes in the by-laws, as well as the change in name, will to some extent increase the prestige and standing of our various branches. Each branch will elect its own councillors and will consequently be more directly represented at the headquarters of the Society than at present. It is intended to hold an annual meeting of the Society once a year in every province. This meeting will be directed by Council, will have representatives present from headquarters, and the official report of the meeting will be published in the annual report. These changes are based on the admitted necessity of greater fraternity and closer co-operation, and will enable the individual member to come to a better appreciation of his fellow members, together with a personal responsibility to the Society and to the profession. The object of our organization in the future will be of a broad enough nature to enable the Society both at headquarters and from its branches to engage in useful in public service.

### *Earning Capacity and Reward.*

Some of you have asked yourselves the question, where does all this lead to and how does it affect our earning capacity? Two definite factors in increased earning capacity are—additional usefulness and added recognition. The usefulness must come from within, and we may take it as an established fact that the engineer has already proven his usefulness over and beyond his monetary reward. Recognition will come from corporate usefulness and educating the public to a better appreciation of what the engineer is really doing. One of the technical journals in discussing the question as to when engineers will be better paid, says, "The inevitable conclusion of any careful study of this question is that engineers will continue to draw low salaries as long as they will work for them. Meanwhile discussion of the question is not wholly without value as men can talk themselves up to the point of making even a bayonet charge. Perhaps after some more years of discussion engineers will begin to ask themselves: 'What are we going to do about it?' After some more discussion somebody will suggest that engineers must demand better pay. Again, after still further discussion, the suggestion will be adopted. Then, and not until then, will the engineer become a permanently well-paid professional man".

Let me ask you, what position would the Government of Canada be in to-day in carrying out the nation's work without the services of the men in the engineering profession? The majority of the departments of the government would be unable to operate without our help. Do the political members of the Government realize that this true? It is certain that they do not. Why? Because we of the engineering profession have in the past taken no corporate action to insure that they should. Instead we have to some extent acted like dumb driven creatures, accepting the crumbs that have fallen by the wayside, content to sell superior qualities of mind and training for a mess of pottage; for despite your capacity, such in general is your reward in comparison with your true worth. As individuals it may not be possible to force the recognition needed, but as a body we are a mighty power capable of securing any reward within reason upon which we set our minds and hearts. It is not only in the government service that engineers receive inadequate reward, but throughout the entire profession, and particularly those employed at railway work.

There is one active full member of our Society who is a resident engineer on one of the transcontinental railways, and his salary is \$100 a month. He has a wife and family. Whose fault is it that such is true? Yours and mine. How much longer is the engineering profession going to continue to be underpaid? Just as long as we permit it, and no longer. We have it in our hands to bring about a different state of affairs, but action is required, not words. We have talked in the past a great deal about inadequate rewards, and we may continue to talk, but nothing will be accomplished until we make a determined effort to secure a higher standard of reward, and we shall find the accomplishment so easy that the wonder will be why we had not thought of doing so sooner. We are to-day exactly in the position of the man staying out all night on his own doorstep because he thought he could not get in, only to find out in the morning that he had the key in his pocket.

### *Education Necessary.*

The government and railway officials and the general public have only a vague conception of what they owe to the engineering profession for their material welfare, and they will continue in ignorance until we have educated them. In the meantime it is we who are culpable, not they.

The newspapers in this country are the great moulders of public opinion, and it is to them we must look, to some extent at least, for co-operation and assistance. For once we have convinced the editors that in doing this they are assisting in the public weal, the natural patriotism that characterizes the editorial body would prompt them to act and give their hearty support.

### *The Future of the Profession.*

To those of you who have become discouraged over the outlook of the engineering profession, let me carry a note of optimism, for the star of the engineering profession has risen above the horizon, it is now started on its upward path of glory and eminence, and just as surely as the past century was an era of material development unprecedented in history, credit for which is largely due to the engineering profession,

just so surely will the coming century see a similar social improvement, whereby the social conditions of the great mass of mankind will be improved, and to a similar extent as were material conditions during the past century, and the group of men who wrought the former change will also be responsible for the greater change that is to come.

The lawyer and the politician have admittedly failed to solve the industrial relations of man to man and the relations between capital and labor. The very qualifications of mind and training that have enabled the engineer to so successfully grasp and solve any problem set before him will be called upon and required to solve and to deal with what will be, after the war, the greatest problem which we have to face.

We find already many of the executives of large industrial concerns being chosen from our own profession and more and more will the men who have received a thorough training in technical matters be called to the high positions in industrial affairs. This will mean the opening up of a scope for the profession, giving rise to a future that will place the technical man in control of the industrial life of the nation. Coincident with that is arriving a condition whereby the engineer must, besides drawing plans and specifications, give his advice in connection with financing of any industrial or engineering undertaking, so that the time is coming, and very soon, that the engineer instead of receiving the reward that capital is willing to offer, will walk hand in hand with the capitalist, on an equal footing, and will share in the rewards that the other has heretofore enjoyed.

In view of such enticing prospects and possibilities for the individual, what limit is there to our development as a profession if we but act in unison? Here we are, a powerful legion with all the potential attributes of mind, heart and soul to carry us to undreamed of heights of eminence, and how far we shall rise as a profession is only limited by the minimum amount of effort which each and every one of us is prepared to give in conjunction with his fellows to make what is reasonably possible a living reality.

And speaking from knowledge, gained by experience in my relations with you, gentlemen of the Ottawa Branch, you who have been leaders in the affairs of the Society in the past, I know full well that in the forward movement leading to the exaltation of the profession, you are certain to play a very important and a very prominent part.

## A CLEAR NOTE ON SOCIETY SERVICE

On page 1206 of this issue will be found an extract from an address by Fraser S. Keith, secretary of the Canadian Society of Civil Engineers. We have not read anywhere so clear an expression of the ideal of Society service as is contained in one paragraph of his address. The development of his ideas, too, shows a very clear vision of a Society program, one that will cleave close to the membership and ensure their constant and enthusiastic support. It will be noted that he places service to the individual members on a high plane, by showing how such service is a necessary precedent to recognition by the public "of the engineer's real place in national affairs," which includes, Mr. Keith adds, "status remuneration and opportunity of service". But Mr. Keith's address is interesting not only because of its intrinsic merit but because it shows that the trend in professional thought in Canada is in the same direction as that here. In other words there is not merely a national unity of thought on either side of the boundary line. There is an international unity—which gives still greater validity to the society currents that are setting in both here and in Canada.—*Editorial Eng. New Record, New York, Thursday, December 27th, 1917.*

## RECOGNITION OF THE ENGINEER

The leading article in *The Canadian Engineer* for this week is an address delivered by Fraser S. Keith, secretary of the Canadian Society of Civil Engineers, at Ottawa, in which an earnest plea is made calling upon all members of the profession, no matter how small a place they may fill, to do what they can to assure that so far as the future is concerned the engineer will bulk more largely than he has in the past, and be awarded a greater share of recognition. Slowly but surely it is beginning to dawn upon many that the present age belongs to the engineer.

During the past few years, and particularly since the outbreak of war, the real value of the engineer and his work has come to be recognized more distinctly and more intelligently than ever. The part he has played in the war has doubtless tended to throw the engineer and his work more prominently into the limelight.

More and more the engineer must assert himself and secure the measure of public appreciation which he rightly deserves. As a public servant, he is by reason of his habit of mind and his training, fully qualified to lead and direct public opinion.

One has only to consider at how many points the engineer touches the life of the community to get a fair conception of how important his position is. Think of the part he plays in the safeguarding of the public health by the design, construction and operation of sewage disposal plants, water purification plants; his relation to the matter of production, transportation, and many other blessings.

His standing, or lack of standing, in the public mind is, in some measure at least, due to his own modesty. Is it not time that this condition was changed and the engineer, as an integral part of the community, assert himself and get the facts concerning his part in human development before the public by the use of the school, the press, the platform and literature?—*Editorial, Canadian Engineer Nov. 22nd, 1917.*

## THE FUTURE PLACE OF THE ENGINEER

Speaking before the Ottawa branch of the Canadian Society of Civil Engineers a few days ago, Mr. Fraser S. Keith, the general secretary, dwelt upon the necessity for educating the general public concerning the value of the work the trained engineer has done and is doing. Mr. Keith claims that the first step has been taken in that there has been an awakening within the profession itself as instanced by various events that have transpired within the past year or two; it remains now only to arouse those outside the profession.

There is no member of the engineering profession, whether civil, electrical, mechanical, chemical, mining or what not who will not raise both hands in favor of Mr. Keith's appeal. Every engineer, too, will plead guilty to his own laxity in "boosting" his profession. But, as has been pointed out so often, this very dislike of publicity or advertising in any form is an inherent part of the engineer's make-up. He has chosen this profession largely because he saw in it an opportunity to work quietly and unostentatiously. His outlook on life has been too ideal to be mercenary, and the world has accepted him on his own conditions and said: "All right, you stick to your ideal—good work—and we will stick to ours—good money."

Yes, the world has taken advantage of the engineer's high ideals and, not understanding them and, so, not valuing them, has neglected to rate them in dollars and cents. As a



result, the brains of the man who designs the big bridge have less market value than the instinct of the salesman who supplies the bolts for the structure. And as long as the engineer accepts this as a satisfactory condition, just so long it will exist. Of course, it is going to be a terribly uphill fight, for the engineer, in general, has no great thirst for money. Even now it is his pride as much as anything that spurs him to demand better monetary recognition. How far is he prepared to go in his demands?

The engineering profession have two very definite precedents before them in the medical and legal professions. Time was when both of these were looked upon in much the same light as the general public now regards the engineer. Two factors have brought about the change—a standard was first established, and after that a proper value was set upon that standard. So, we believe, it must be in our own profession. An "engineer" must mean something more than the "expert", who receives his title from the newspaper reporter and, after that, there must be a mutual understanding and recognition among engineers themselves of the value of their services.

Another phase of the engineer's future which Mr. Keith touched upon, and which we have repeatedly advocated, is that he must interest himself in the government of his country. Mr. Keith says: "The lawyer and the politician have admittedly failed to solve the industrial relations of man to man and the relation between capital and labor." How could it be otherwise? The actions of lawyers and doctors are regulated by precedent. Their education consists largely in a study of past experiences. The education of an engineer, on the contrary, consists in an examination of general principles—his after success consists in their application. Every problem in engineering is, in the main, a new one, and so there is developed that attitude of mind, that aptitude and quality of mind, that makes the engineer the logical choice for the solution of most of those problems for

which there is no precedent. Such a one is the relation of labor and capital. Now that our governments are showing signs of recognizing the principle of regulation and control "for the good of the state," no better men could be chosen for the councils of the state than men trained in engineering experience.—*Editorial, Electrical News, Dec. 1st.*

## **"THE ENGINEER IS FAST BECOMING AN ECONOMIST"**

Fraser S. Keith, general secretary of the Canadian Society, said in a recent address (see our issue of Dec. 26, p. 540):

"The gradual evolution of the status of the engineer..... he is fast becoming an economist and an arbiter in industrial problems."

For 12 years this journal has editorially urged engineers not only to study economics, but to reach out for economic leadership, politically and industrially. The idea that the engineer should primarily be an economist was slow in gaining adoption, but now it may be regarded as having received general acceptance by many engineers. The next task is to educate the public to regard the engineer as an industrial and political economist. Mr. Keith says:

"The government and railway official..... In the meantime it is we who are culpable, not they."

"The newspaper in this country are..... would prompt them to act and give their hearty support."

"To those of you who have become discouraged..... and the group of men who wrought the former change will also be responsible for the greater change that is to come."—*Editorial, Engineering and Contracting, Chicago.*

